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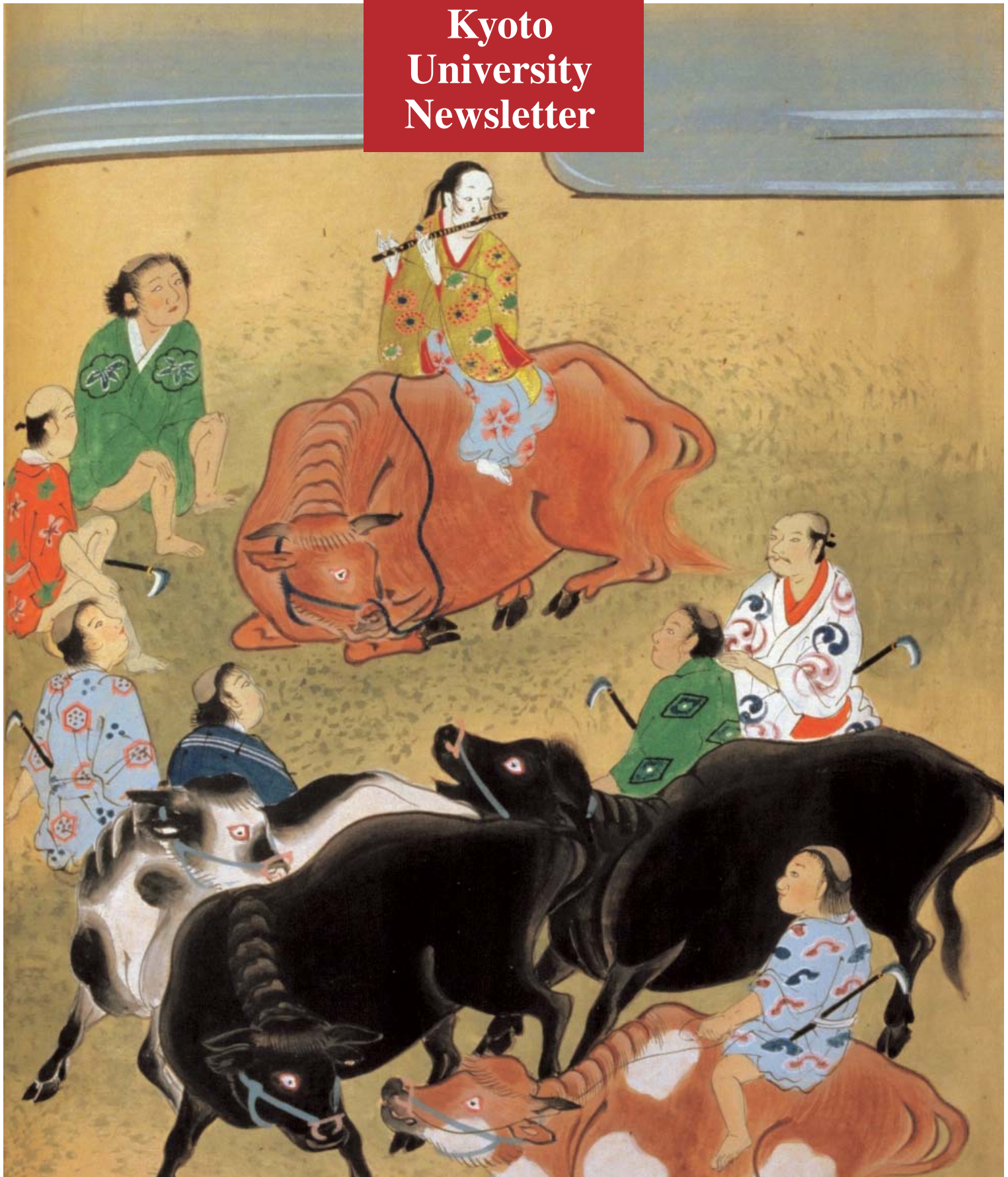
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楽友
Raku-Yu

Kyoto
University
Newsletter



1 Creating a Researchers' Utopia at Kyoto University

Kiyoshi YOSHIKAWA, Executive Vice-President of Kyoto University

2 Special Feature

Leaders and Researchers in the Age of University Globalization

— A Special Discussion to Celebrate the Winning of the Nobel Prize by Professor Shinya Yamanaka —

Hiroshi Matsumoto, President of Kyoto University

Shinya Yamanaka, Director of the Center for iPS Cell Research and Application

Mari Onuki, Program-Specific Researcher at the Center for iPS Cell Research and Application

Ren Shimamoto, Program-Specific Researcher at the Center for iPS Cell Research and Application

Hidetoshi Kotera, Executive Vice-President of Kyoto University

7 What's Happening in International Relations

H.E. Ms. Irina Bokova, Director-General of UNESCO Visits Kyoto University for Joint Internship Program and Lecture Meeting

VKCO Holds Japan Education Fair in Danang

8 Forefronts of Research at Kyoto University

Making Fat Your Ally Again: Studying the Function of Food

Teruo KAWADA, Professor, Graduate School of Agriculture

The Moment at Which Books Evolve into "Media"

Takumi SATO, Associate Professor, Graduate School of Education

12 ESSAY

Getting into the Monkey Business

Michael Alan HUFFMAN, Associate Professor, Primate Research Institute

13 INTERVIEW

"I want to continue my research activities in the firm belief that basic researchers can contribute to society by producing seeds of new technologies."

Naoki KOMATSU, Graduate School of Biostudies

14 PROMENADE

Kyoto Kanze Kaikan: Experience the Culmination of Traditional Japanese Culture and Aesthetics

Editor's Notes

In the global context of the 21st century, the issue of the human subject (Shutai) faces a pressing need to be reconsidered for our political, moral and educational lives. In Japanese society, especially after Fukushima, the reconsideration of the nature of the human subject cannot be a matter of concern only among academic scholars: rather it involves the ethical question of how one should live with others in democracy as a way of life. Turning our eyes to cross-cultural dimensions, the issue of the human subject has been heavily dominated by modern western conceptions of autonomy and rationality – with uni-directional traffic from the west to east. In the global age when even the categorization of west and east itself is destabilized, and when what are alleged to be cultural identities are all the more fluid, the subject is disturbed, especially in encountering the other who exceeds one's imagination. Its own discourse of mutual understanding and recognition being destabilized, the mode and discourse of academic research in humanities is to be transformed through bilateral and interdisciplinary dialogue, crossing various borders. We hope *Raku-Yu* will serve as an occasion for such dialogue.

Cover Photo: "Eboshiori Soshi," a Story in "Otogi Zoshi" (illustrated short stories)

During the latter half of the 12th century, the warrior class took political power from the court nobles, who until then had ruled the country. Among the emerging warriors were two powerful clans: the Heike (Taira) and the Genji (Minamoto). Although the Heike (Taira) clan was the first to rise, they were defeated in a series of battles, led by the Minamoto brothers Yoritomo and Yoshitsune. After their victory, Yoritomo established the first Shogunate government in 1192.

The hero of *Eboshiori Soshi* is a boy named Ushiwaka (childhood name of Yoshitsune Minamoto). Escaping from Kuramadera Temple in northern Kyoto, where he was virtually confined by order of the Heike (Taira) clan, Ushiwaka makes a long journey toward the Tohoku region to prepare himself for battle against the Heike (Taira) clan. On his way, he plays the flute so beautifully that he enchants every listener. After this scene, the following episode is inserted about his flute:

In a rural area, a young emperor falls in love with a beautiful young woman who is a daughter of a rich farmer. The emperor abdicates the throne to go to the rural area, where he hides his identity and becomes a cowherd. He asks villagers to help with his cows; in exchange, he plays the flute. At the end of the episode, he returns to the capital city with the farmer's daughter, marries her, and restores his position as emperor.

The picture on the cover of this issue depicts a few cowherds and cows under the spell of the flute music played by the emperor.

Ushiwaka (lit. young cow), or Yoshitsune Minamoto, made the greatest contribution to the victory of the Genji (Minamoto) clan. However, his elder brother, Yoritomo, subsequently killed Yoshitsune in battle. To date, Yoshitsune's tragic life continues to evoke deep sympathy in many Japanese people. As a result, his short life has repeatedly been represented in novels, films, and TV dramas.

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A Note on Order of Names

As a general rule, names appearing in *Raku-Yu* are written in given name/family name order.



This name was taken from the assembly hall called "*Raku-Yu Kaikan*" that commemorated the 25th anniversary of the founding of Kyoto University.



Kiyoshi YOSHIKAWA Executive Vice-President Yoshikawa was born in 1943 in Nara, Japan's ancient capital. During his early school years, he aspired to become a diplomat and work for world peace. In the fourth grade of elementary school, he heard that a senior student had built a crystal radio. This made him interested in ham radio. "At that time," Dr. Yoshikawa explained, "it was much more difficult to go abroad than it is now. So I found it exciting to talk with people overseas via invisible radio waves. Since I was initially aspiring to become a diplomat, I guess I was extremely curious about the world outside Japan." During his high school, he became interested in astronomy and learned that nuclear fusion reactions occur throughout space. This led him to aspire to study nuclear energy. Having met with post-doctoral researchers and assistants from Kyoto University who were teaching at his high school, he began to be interested in Kyoto University and its uniquely liberal campus culture. In 1962, he entered Kyoto University's Department of Nuclear Engineering. Since then, he has been committed to researching direct energy conversion. After receiving his doctorate degree in engineering in 1974, he worked as a researcher at the University of California for a year and a half. In 1992, he assumed professorial duties at the Institute of Atomic Energy (now the Institute of Advanced Energy) of Kyoto University, where he was appointed director in 2000. Since October 2008, as an Executive Vice President for Research at Kyoto University, he has been devoted to various programs designed to promote Kyoto University as a frontrunner in academic competition. In other words, to promote the University, Dr. Yoshikawa continues to play the role of a "ham radio."



Creating a Researchers' Utopia at Kyoto University

With the aim of promoting scientific research, Kyoto University was founded in 1897 as Japan's second imperial university. For its location, the government at the time selected Kyoto, a quiet city remote from Tokyo and an ancient capital of Japan, as well as the repository of Japanese culture of the past millennium. To relocate the Third High School, one of the University's predecessors, from Osaka to Kyoto, Kyoto Prefecture donated 100,000 yen to the Ministry of Education, an amount accounting for 20% of the Prefecture's tax revenue at that time. This fact indicates that residents of Kyoto were extremely eager to promote research and educational activities, an enthusiasm that I believe has been passed down to the present residents of Kyoto.

With such a background, the University believes that its mission is "to sustain and develop its historical commitment to academic freedom and to pursue harmonious coexistence within the human and ecological community on this planet." Since the University's founding, it has been committed to promoting international cooperation and to building and reinforcing global partnerships. One of our ultimate goals is to evolve the University into a utopia for researchers. As part of efforts to realize this vision, in 2009 we initiated the *Hakubi* Project, a program to invite young researchers from around the world and to employ them for five years, ensuring that they can concentrate their efforts solely on their own research activities in Kyoto or anywhere else in the world. *Hakubi* researchers are relieved from any tasks unrelated to their research activities. Moreover, they can work from a long-term perspective since their research results are not

evaluated until the end of the five-year period. In April 2013, the University will employ 20 researchers in the *Hakubi* Project, for which we already have 655 applicants, including 240 applicants from outside Japan.

Last year, we had particularly delightful news. Professor Shinya Yamanaka, Director of the Center for iPS Cell Research and Application, received the 2012 Nobel Prize in Physiology or Medicine. He was honored in recognition of the successful production of induced pluripotent stem cells (iPS cells), which is indeed a great achievement in the life sciences. The cell technology is also expected to have great impact on human history, since it involves a phenomenon that can be described as "reversing of time." Whereas there is a growing expectation for broad application of the new technology, it is also essential to hold in-depth discussions in a timely manner on the bioethical implications of its application.

Finally, I would like to remind all researchers at Kyoto University of the invaluable lessons we learned from the unprecedented disasters that occurred in East Japan on March 11, 2011—the earthquake, tsunami, and nuclear power plant accident. The triple disasters made us realize the great power of nature that goes far beyond human imagination. In devoting themselves to cutting-edge research programs, I hope that all researchers at the University will remain humble and modest toward the power of nature.

A handwritten signature in black ink, reading "Kiyoshi Yoshikawa" in a cursive style.

Kiyoshi YOSHIKAWA
Executive Vice-President of Kyoto University



Professor Shinya YAMANAKA

Leaders and Researchers in the Age of University Globalization

In 2012 Professor Shinya Yamanaka, director of the Center for iPS Cell Research and Application (CiRA) at Kyoto University, was awarded the Nobel Prize in Physiology or Medicine for the “discovery that mature cells can be reprogrammed to become pluripotent.” Professor Yamanaka frequently refers to the excellent teamwork and efforts of young researchers as a key factor of this discovery. Such remarks highlight the vital importance of fostering young world-class researchers and reinforcing teamwork in order to succeed in the increasingly competitive world of international research. For this issue, the editor of *Raku-Yu* arranged a discussion meeting between President Hiroshi Matsumoto, Professor Yamanaka, and two young researchers at CiRA. Professor Hidetoshi Kotera, executive vice-president for external strategy, knowledge & technology transfer and innovation served as a moderator. The discussion focused on the ideal qualities of leaders in the age of globalization, and ways to foster young researchers.

Building good teamwork based on a shared, steadfast vision

KOTERA: Professor Yamanaka, I understand that as the director of CiRA, you are exerting your leadership to manage your team and foster young researchers. Please let us know what your priorities are in managing your research team.

YAMANAKA: Up until now, I have been trained as a scientist and I have confidence in fulfilling my role as a scientist. However, I have never been trained to be a leader. To tell the truth, I am often worried about what I should do as a leader. Yet, I believe that a leader should embrace a definite vision.

As the leader of my team, I try to uphold a clear and steadfast vision. It's important that I always hold the same vision, that is, to work to realize regenerative medicine. Although CiRA is engaged in basic research, we should never forget that our basic research should pave the way for clinical applications. While committing to basic research activities, we must always consider in what ways we can help patients. I hope that all members of my team share this vision. To instill this vision in my team members, I often discuss these ideas at weekly meetings at my laboratory.

KOTERA: Thank you Professor Yamanaka. I believe it must be extremely difficult to

convey the vision you have just explained to the over 200 researchers at your laboratory. President Matsumoto, as president of the university, you are expected to share your vision with many more individuals.

MATSUMOTO: First, let's consider why people follow a good leader. One reason is, of course, they support their leader's views and vision. Another reason is that they respect the leader, feeling empathy for his or her character. Professor Yamanaka is an excellent leader in both senses. He has a well-rounded character and a good

Participants:

Hiroshi Matsumoto (President, Kyoto University)
Shinya Yamanaka (Director, CiRA)
Mari Onuki (Program-Specific Researcher, CiRA)
Ren Shimamoto (Program-Specific Researcher, CiRA)

Moderator:

Hidetoshi Kotera (Executive Vice-President for External Strategy, Knowledge & Technology Transfer and Innovation, Kyoto University)



Members of CiRA (in costume) welcome Professor Yamanaka on the evening his award of the Nobel Prize was announced.

sense of humor, while his works are those of a genius. This is why so many people respect Professor Yamanaka and follow his leadership. Professor Yamanaka holds his vision steadfastly, the vision that his basic research should pave the way for clinical applications. This is important since many researchers working at universities are apt to engage in research activities for the sake of research. Unless researchers are firmly determined that their tasks should benefit society, they are likely to indulge in pursuit of satisfying their own curiosities. I have also refrained from this temptation throughout my career.

Professor Yamanaka has mentioned that a leader should always uphold the same vision. It is truly important to remain consistent and steadfast. Once you say something, you can never erase your words. So a leader should take responsibility for whatever statement he or she makes. If a leader changes his or her mind frequently, no one can follow him or her with any confidence. Whether you are right or wrong will be judged by history. What is currently believed to be true might be denied in the future, and vice versa. Accordingly, a leader should not change his or her vision, but remain steadfast all the time.

I also believe that a leader should play the roles of both vanguard and rear guard. In addition to leading those who are following him or her, a leader should be determined to look after those who are following at the tail end. This is another essential role of a leader.

YAMANAKA: I dare to announce my vision. By doing so, I impose pressure on myself. I believe many other people also take this approach. When I formed a team for CiRA in 2010, I announced to the staff my vision and the goals that we should achieve.

KOTERA: Ms. Onuki and Mr. Shimamoto, since you are working at CiRA, I'd like to ask you what impressions you have of Professor Yamanaka.

ONUKE: Professor Yamanaka has a steadfast personality. He is consistent in the

way he communicates; that is, he uses the same words and tone when he speaks to students as when he speaks to the media. He consistently conveys the same vision and same goals. He encourages us in our work, sometimes pointing out our mistakes. Since he conveys his vision to us in person, we definitely share at the vision with him.

KOTERA: Before you can share his vision, I expect you would have to ask questions and adjust your own beliefs to align with his. Did you have such an experience?

SHIMAMOTO: In my case, no doubts arose in my mind about his vision because it is extremely simple and clear. Professor Yamanaka's vision is precise: the practical application of iPS cells. To achieve that goal, each staff member is dedicated to his or her research activities.

ONUKE: When conducting experiments, Professor Yamanaka and I sometimes have the same ideas about what is the important knowledge to be gained. At other times, however, he may point out something that I have never thought of. Recently, while examining experimental data, Professor Yamanaka pointed out several important points that I had never been aware of. I felt as if my eyes were opened by his suggestions.

MATSUMOTO: Young researchers should think deeply about many things. It is essential that you have your own views, different from those of your mentors – even if your mentor is a Nobel Prize winner, such as Professor Yamanaka. I have been engaged in research activities in an academic field that is totally different from that of Professor Yamanaka. My research fields are related to physics and include space plasma wave studies, space energy engineering, and communication engineering. In all of those different fields, however, I am always thinking about how my research can benefit people and society.

Throughout my career as a scientist, I have sought to lead the research in those specific areas and establish my own original



identity. I have also told my students to do the same. To be at the forefront of research and present your original ideas, you need to regard your mentor as your rival. I have often told my students that they should become top scientists, unrivaled by any other, at least in their chosen area. It's certainly important to share a vision with your leader, but at the same time, I hope that students will be determined to surpass their leaders. In other words, while learning from your leader, you should also strive to establish your own originality. In the beginning, you should seek to be an unrivaled scientist in a small field with few competitors. Eventually, you should gradually expand that field. That process will surely help establish your own originality. An organization needs diverse characters, and when they align the direction of their efforts, the organization can exert its power.

Trust in your experimental results, and seek to find your own path.

KOTERA: Professor Yamanaka, I imagine that you and your students sometimes have different views about how to interpret the data you obtain. What do you do in such situations?



Executive Vice-President Hidetoshi KOTERA

YAMANAKA: That kind of situation is very common at my laboratory. I always tell my students and young researchers, “Don’t believe what I say. Don’t believe what is written in your textbooks, but trust only your experimental data.” I encourage them to interpret experimental data without any bias or preconceptions. It’s perfectly all right to produce results that differ from the hypothesis. I tell my laboratory members that all we need is the truth. The last thing that any researcher should do is pick up only “favorable” data and ignore other “unfavorable” data. For instance, even if your leader wants data indicating “blue,” you should never pick up the data suggesting only “blue.” If the experiment suggests “red” instead of “blue,” you must have the courage to say “red,” even if the hypothesis suggests “blue” and your leader wants “blue.” You may feel that you could write a paper more easily if the result were “blue.” Even in that case, you should definitely say “red,” not “blue.” It is a leader’s role to create an atmosphere where the staff can confidently announce it is “red.”

SHIMAMOTO: I certainly agree with what Professor Yamanaka has just said, but it is not so easy to actually put that into practice. When I conduct experiments, I am naturally hoping for positive results, or results that are favorable for me and for the team. So when the results are not positive, I often become disappointed and depressed,

although I try not to. When experiments suggest the opposite of what was expected, I consult with Professor Yamanaka about conducting more experiments to enhance the objectivity of the data, and try to study the data from different angles. In this way, I always try to interpret the data without bias.

KOTERA: I think that discovering something in your results that no one else has noticed is probably a researcher’s happiest moment. In fact, attaining that happy moment is the motivation behind the arduous work of many researchers. A good leader encourages his or her staff to work towards that moment, so that they can all share in the happy experience.

MATSUMOTO: Yes, but sometimes it’s not so easy. Since team members have different personalities, if you encourage them all in the same manner, they are likely to respond differently. If a leader imposes strict rules on their activities, this will hinder their creativity. On the other hand, if a leader allows them to work completely as they like, the leader can’t control the team. A good leader should seek an optimal balance between those two approaches. Ideally, leaders should encourage individual members to engage in research activities as freely as possible, as long as their activities remain within a certain framework. In doing so, I believe the leader can kindle a flame in the team members’ hearts. Once that flame has been kindled, it will burn by itself. It is the role of a leader to ignite the fire, so that young minds can burn by

themselves. Sometimes the leader and the staff should clash with each other. This can strengthen their ties, provided that they share the same core vision and have a deep understanding of each other.

YAMANAKA: I think it is worth repeating that students should learn not from their teachers, but from the results of their experiments. Experimental results will often reveal a small sign of something completely unexpected, and like the barely visible tip of an iceberg, such signs can point the way to larger discoveries. Researchers and students must be careful not to miss those signs as they are essential seeds for future research. Researchers’ future success depends on their ability to recognize such small clues that their experiments offer to them.

It is also important to select your own research themes. You should not rely on your professor to select a research theme for you. Following your professor’s advice, you will be able to write an academic paper, but you will have to be independent someday. I believe that you can find clues for your own research themes in the results of your day-to-day experiments.

MATSUMOTO: Many researchers are involved in large projects. You tend to see many researchers’ names listed in the papers of such projects. However, you should never be satisfied to see your name in such a long list. As Professor Yamanaka said, to find your own research theme, you should interpret experimental results with an open mind. It is of course important to





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The Nobel Prize Awarding Ceremony

share a vision with your team members, but on top of that, you must have your own vision, and you have to embrace a strong aspiration to contribute to society through your own research. I believe that such an approach is essential to becoming an independent researcher.

Role of young researchers in international collaboration and competition

KOTERA: Modern researchers are expected to be active on the global stage. Professor Yamanaka, I understand that you have studied overseas and collaborated with many researchers of diverse nationalities. In this age of advanced globalization, what do you expect of young researchers?

YAMANAKA: To begin with, there are no national borders in science. I began my career as a surgeon. Subsequent to that, I began my research activities at graduate school. At that time, my direct mentor told me, “Although you are now studying in a very small, limited area of science, you must become the top researcher in that area.” When I was in the hospital, I had never thought of competing with researchers outside Japan. In graduate school, however, I was encouraged to seek to become the top researcher in the world.

I was deeply impressed and inspired by the mentor’s words, which utterly changed my view of the world. To this day, my research activities have been driven by the desire to become the top researcher in the world. I think that any scientist will find it exciting to compete with other scientists worldwide, but to do so, you must first go out into the world. Recently, the number of young Japanese people studying abroad is decreasing. However, I believe that to compete in the global arena, you must first physically go abroad.

ONUKE: My term as a researcher will end in a year. After the term finishes, I plan to study abroad. Many friends of mine also plan to study abroad. So I actually find it hard to believe that the number of young Japanese people interested in studying abroad is decreasing.

SHIMAMOTO: I agree with Ms. Onuki. At CiRA, we use English at progress meetings and meetings of the students’ journal club. We also often have overseas researchers visit us, so I believe the staff of the CiRA does have a global perspective.

KOTERA: Are you aiming to build students’ English proficiency through the use of English for presentations and discussions?

YAMANAKA: That’s right. When I made this rule, no one but me made remarks or asked questions. Within three or four years, however, our students and young researchers have begun to speak more English. I believe that we should continue using English.

Mari ONUKE



MATSUMOTO: To be active in the international community, you must have the ability to communicate at least sufficiently enough to understand others and to make yourself understood. But English proficiency is not the only requisite for internationalization. Although Professor Yamanaka has said that there are no national borders in science, even in the world of science, researchers’ values and cultural backgrounds influence their research activities. I encourage young researchers to attend not only presentation and debate meetings, but also the parties which are often held after those meetings, as that will provide you with good opportunities to build friendships with other researchers. If you build such relations with researchers from other countries, you will find it easier to collaborate with them. To build friendly relationships, however, you must have a deep knowledge of your own country and its culture, and have your own philosophy or view of life. Otherwise, people will not take an interest in you, and you will find it difficult to have meaningful discussions with others.

To become a truly international person, in addition to putting forth your own opinions, you must also listen to the views of others, and digest them so that your own views evolve. It’s important to maintain that cycle. I have served at many universities as both a visiting professor and researcher. I also served for three years as the president of the International Union of Radio Science (URSI), an international academic society established in 1911. The membership of the URSI comprised researchers from forty-eight different countries, and was divided into ten commissions covering different

Ren SHIMAMOTO





fields. It was extremely difficult, therefore, to coordinate the conflicting interests among all the members and commissions. The experience was beneficial, however, in developing my awareness of the international context.

YAMANAKA: I once studied at the Gladstone Institutes as a postdoctoral fellow. Even today, I visit the institute about ten times a year. Each time I visit, I learn many important things. I learn a great deal about building and maintaining good human relations and managing organizations properly. I probably learn more about those things than about issues directly related to my research activities.

MATSUMOTO: I once studied in the United States for two years. At that time, I had many opportunities to meet with scientists of various cultural backgrounds. At Kyoto University, we also have many visitors from abroad. Through interacting with those visitors, I truly hope that students at Kyoto University will learn firsthand about various different views and approaches toward science. I hope that their exchange of ideas will promote true international understanding.

SHIMAMOTO: Last year I attended a party following a meeting of the International Society for Stem Cell Research (ISSCR), held in Yokohama. The party had an atmosphere similar to a nightclub. I fondly remember that scientists from many countries discussed their visions and exchanged

their views about scientific matters, all while sipping their favorite drinks.

MATSUMOTO: You cannot engage in communications in the fullest sense of the word without a good knowledge of the culture and history of your own country. Yes, science is universal, but how a society applies scientific discoveries differs from one country to another. I think it is important for scientists to mutually understand the culture and history of their respective countries to attain good foundation for cooperation. I hope that students will read widely to deepen their understanding of the cultures of various countries. Let me stress once again that Professor Yamanaka fascinates so many people, partly because he has such a deep and broad knowledge, and is familiar with diverse cultures.

KOTERA: Finally, I would like President Matsumoto and Professor Yamanaka to offer some advice to young people aspiring to become researchers.

YAMANAKA: I want to urge young people to find something to devote themselves to during their student days. That something doesn't need to be directly related to research or science. In fact, I believe it is all the better if it is *not* research or science. By devoting yourselves to something you like, you can experience both success and failure. I believe that you must have diverse experiences during your twenties to help develop your future vision. In my own twenties, I never thought of becoming a researcher. My aspirations at that time were to become a clinician, and to cure people with sports injuries. I once actually took the bullet train from Osaka to attend a seminar held at the National Stadium in Tokyo. I truly hope that young people will try many things, so as to learn many things, and build a wealth of experience.

You have only one life, so you must make the most of it.

MATSUMOTO: Since contemporary higher education does not really emphasize a holistic education with a broad scope, students tend to narrow down the scope focus of their studies towards their own specific interests. I think this trend is regrettable. If you plan to become a researcher, and study only the subjects that seem to relate directly to your area of specialization, it is unlikely that you will become a truly accomplished researcher. You can't tell what will happen in the future, so it is important that you build your capacity to be useful in any eventuality. It's important to develop your abilities so they will be useful whether you become a researcher, a businessperson, or a government official. During your school days, from elementary to senior high school, you have to gain a broad knowledge, if possible through firsthand experiences. When you enter university, and when you decide to become a researcher, that's when your own vision becomes important. I think that many researchers are driven by their personal interests, but there's more to being a good researcher than that. Researchers have a great responsibility to society. I hope that aspiring young researchers will constantly ask themselves why they are engaged in their work, and think about the motivation behind their research.

KOTERA: Thank you very much President Matsumoto and Professor Yamanaka, and thank you everyone for participating in this discussion.



H.E. Ms. Irina Bokova, Director-General of UNESCO Visits Kyoto University for Joint Internship Program and Lecture Meeting

November 6, 2012

H.E. Ms. Irina Bokova, director-general of the United Nations Educational, Scientific and Cultural Organization (UNESCO) visited Kyoto University on Nov. 6, 2012 to conclude an agreement for a joint internship program and participate in a lecture meeting titled Kyoto and UNESCO: A Partnership for Learning and Cultural Heritage, which was held at the Kyoto University Clock Tower Centennial Hall.

The joint internship program with UNESCO aims to provide Kyoto University faculty, staff and graduate students with opportunities to gain work experience in an international organization and enhance their capacity as modern global human resources. The signing ceremony for the agreement was attended by dele-

gates from the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Ministry of Foreign Affairs.

The lecture meeting, which was open to the general public, was held after the signing ceremony and drew an audience of over three-hundred people. During the meeting H.E. Ms. Bokova delivered an impassioned speech. On the topic of cultural heritage, she asserted that "cultural heritage and cultural diversity are sources of identity and solidarity. They are wellsprings of innovation and creativity." She went on to emphasize the importance of educating the

young generation about valuing and preserving cultural heritage assets, describing UNESCO's efforts to achieve such awareness, and the expectations that the organization has for today's youth.



H.E. Ms. Irina Bokova and President Hiroshi Matsumoto conclude the internship program agreement prior to the lecture meeting

VKCO Holds Japan Education Fair in Danang

November 22, 2012

The Vietnam National University, Hanoi-Kyoto University Collaboration Office (VKCO), established in 2010, held a Japan Education Fair at the University of Danang, Vietnam on November 22, 2012. The fair aimed to provide practical information to Vietnamese students about study opportunities in Japan, and enable Japanese universities to promote themselves to Vietnamese students.

Japan has long been a popular study destination for Vietnamese students and researchers, but the recruitment activities of Japanese universities has mainly focused on the major metropolitan centers of Hanoi and Ho Chi Minh City. The Japan Education Fair was the first of its kind to be held in Danang, and involved the participation of twelve of Japan's leading universities, including several institutions recruited by the Japanese government for its Project for Establishing University Network for Internationalization (Global 30 Project). The fair was held with the support of

the Japan Student Services Organization (JASSO), Danang University, and the Osaka-Kobe University Network for Internationalization. JASSO-organized Japan education fairs were also held in Hanoi and Ho Chi Minh City two days after the event in Danang, with many Japanese universities taking advantage of the opportunity to participate in multiple fairs.

This fair attracted approximately 700 students, including high school, college and university students, as well as teachers and parents from Danang city. Students had the opportunity to consult with faculty members from the participating universities and learn about many aspects of studying in Japan, such as admission requirements, time schedules, and scholarships. Students also had the chance to attend presentations about each university given by the faculty members.

Prior to the event, delegations from the participating Japanese universities visited four prominent high schools in Danang and neighboring city, Hue. The delegations visited both private and public high schools, and were able to promote their institutions directly to students and teachers.

The VKCO aims to develop such activities further, and to continue serving as a point of contact between Vietnamese students and universities in Japan.



Associate Professor Shine is answering questions from students at Kyoto University desk

Making Fat Your Ally Again: Studying the Function of Food

Adipocytes, the fundamental target of basic research

Adipose (fat) tissue is made of many types of cells, with the major components being white adipocytes (fat cells) and their precursors, vascular cells, neurons, and immune system cells. The primary function of white adipocytes is to store lipids converted from food-derived sugar and fat, and prepare them when the body needs energy, for example, during exercise (Fig.1a). Although there may seem to be no change in weight or in body fat, the lipids in adipose tissue are actually maintaining a state of dynamic equilibrium in which they are constantly being replaced.

Brown adipocytes, on the other hand, use stored lipids to generate heat (Fig.1b). We know that when the performance and population of these cells decline, the body becomes vulnerable to obesity and lifestyle diseases. Right now, much cutting-edge research is focusing on enhancing the performance and preventing the loss of the brown adipocytes, which many scientists believe is the key to treating obesity.

Understanding the cell biology behind metabolic disorders and properties of adipocytes

So why does obesity lead to illness? Adipose tissue is now being viewed as a type of endocrine gland that affects the entire body by secreting various hormones

and organic compounds (Fig.2). These hormones and compounds can be divided into so-called “good factors” that prevent and alleviate diabetes, atherosclerosis and other condition, and so-called “bad factors” that trigger illness. If this is the case, why does the same type of tissue produce two different categories of compounds that have entirely opposite effects?

Adipose tissue surrounds capillaries that transport nutrients and oxygen. However, pressure at the distal ends of capillaries decreases, resulting in inadequate flow of nutrients and oxygen. To counter this phenomenon, adipocytes secrete a compound called angiotensin which increases pressure in proximal capillaries. When the body becomes overweight, adipocytes produce more angiotensin that circulates throughout the body and systemically raises blood pressure. In addition, the onset of obesity causes cells called macrophages to infiltrate adipose tissue and release a chemical substance called tumor necrosis factor- α (TNF- α). TNF- α makes cells less sensitive to insulin and suppresses their ability to absorb sugar, one of the materials necessary to synthesize lipids. This process is believed to be a safety mechanism to prevent excess lipid accumulation. However, when the process goes awry the body becomes resistant to insulin and eventually develops type 2 diabetes mellitus. In this manner, a system

that normally helps enhance, maintain and manage adipose tissue functions can also precipitate illness.

Studying the mechanism that controls genetic expression in adipocytes

When a person goes on a diet and loses weight and body fat, the number of adipocytes stays the same. These adipocytes, which at a glance seem to have been depleted of lipids, regress into what is called a state of dedifferentiation. But when the body accumulates an overabundance of potential energy, the dedifferentiated adipocytes rapidly regenerate into mature adipocytes. From this balancing act, we can appreciate how the genetic mechanism controlling the differentiation and maturation of adipocytes is highly meticulous.

Under normal circumstances, fat (or fatty acids, to be more precise), is used by the body to store energy. However, fatty acids can also act as a signal that triggers the production and development of adipocytes. They become what are called ligands, organic compounds that bind to specific receptors in cells. The precursors of adipocytes absorb these fatty acids, which then bind to receptors called peroxisome proliferator-activated receptors (PPARs) in the nucleus. Stimulation of these PPARs leads to the expression of genes that transform the precursor into an adipocyte (Fig.3). The role of fatty acids as a ligand that activates PPAR and promotes the production and development of adipocytes is usually modest. Nevertheless, during our research of the functions of food, we serendipitously discovered that a compound produced by adipocytes called farnesyl pyrophosphate (Fig.4) exhibits even stronger autoregulatory properties than fatty acids. We had stumbled upon an entirely novel action of farnesyl pyrophosphate, a substance conventionally known as an intermediate in the biochemical pathway for the synthesis of cholesterol and gonadal steroids

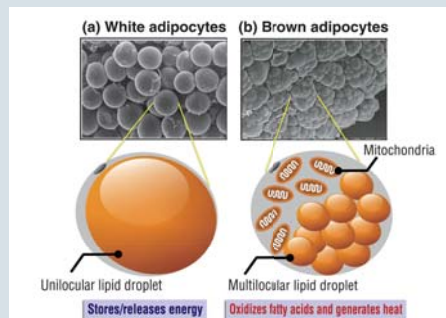


Fig.1: Scanning electron microscope images and inner structures of (a) white and (b) brown adipocytes Lipids in unilocular lipid droplets exist as one large globule as opposed to multiple small globules in multilocular droplets. Photograph Source: Professor Emeritus Hajime Sugihara, Saga University.

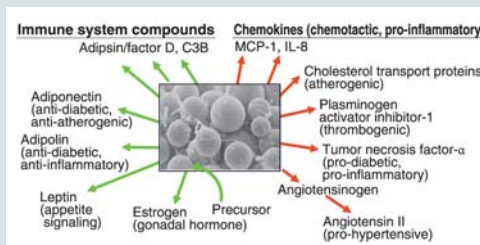
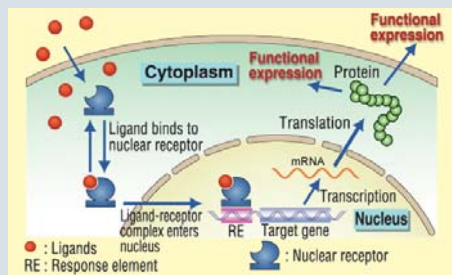


Fig.2: White adipose tissue as an endocrine gland Adipocytes produce many compounds with various effects. Compounds indicated with red arrows are involved in the onset of diabetes and other conditions while those indicated with green arrows contribute to the prevention and mitigation of such disorders. Maintaining an adequate level of body fat is important for good health because adipocytes produce less female gonadal steroids when the body undergoes drastic weight loss.



(so-called sex hormones). This finding is anticipated to lead to the development of new treatments.

The function of food: Benefiting from a new concept emanating from Kyoto University to the entire world

In the mid-1980s, Professor Hideo Chiba of the Kyoto University Faculty of Agriculture (currently Professor Emeritus of the same university) proposed a new concept he called “the physiological function of food.” Prof. Chiba suggested that efforts to define the purpose of food should focus on the effects of food on the body (i.e., its functions), a viewpoint that diverged from the standard practice of studying its physical characteristics. The idea of food as a physiological (tertiary) regulator possessing many functions such as stimulation of the immune system subsequently spread throughout the world and many new types of products emerged from the results of functional research

based on this concept. Moreover, a significant number of scientists actively pursuing this field are from Prof. Chiba's alma mater, Kyoto University.

Recent years have seen the rise of metabolomics, the study of the chemical processes of metabolites. Born from the merging of highly precise and sensitive analytical technology with cutting-edge bioinformatics, metabolomic analysis is currently being used to comprehensively identify the substances that comprise what we eat. For example, metabolomic analysis has revealed that mini tomatoes contain more than 800 types of organic compounds. The maintenance and management of our health depends heavily on the various physiological reactions driven by the multitude of substances we ingest every day. The science of food and medicine is

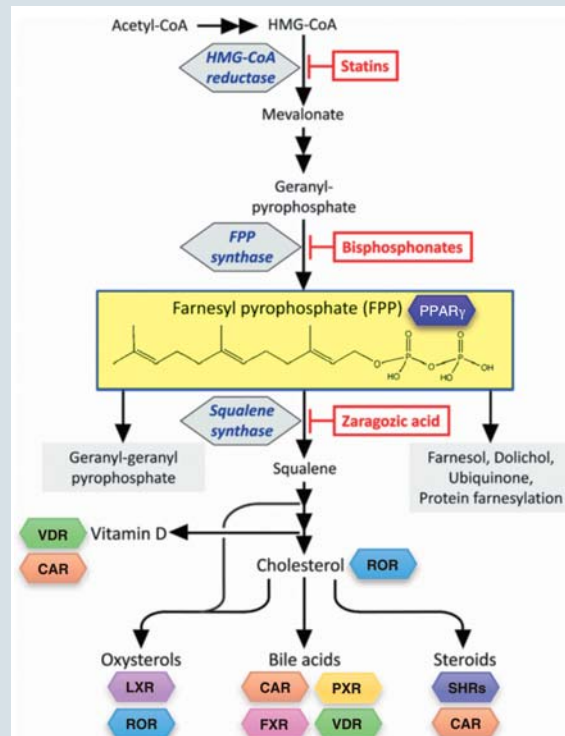


Fig.4: Metabolites and nuclear receptors involved in the isoprenoid biosynthesis pathway
The nuclear receptor PPAR γ and its endogenous ligand (farnesyl pyrophosphate) control adipocyte production. The vitamin D receptor (VDR) and other nuclear receptors shown in blue also exhibit unique regulation of genetic transcription via hormonal signaling. Statins are used as drugs that reduce cholesterol synthesis by inhibiting the enzyme HMG-CoA reductase. Adapted from Biochem J (2011) 438 (e2).

approaching a watershed moment, and we believe the way we generally view food will undergo a dramatic transformation in the near future.

Teruo KAWADA

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- Ph.D., Kyoto University
- Professor, Graduate School of Agriculture, Kyoto University
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“I want to make people happy. This desire drives me to devote myself to research programs.”

During the early 1980s a Japanese research team led by scientists at Kyoto University defined a new concept, functionality of food, for the first time. This was the beginning of the new academic field, known as food functionality studies, which subsequently spread across the world. Professor Teruo Kawada has since continued to pioneer research in this new field, in its birthplace.

Professor Kawada was raised in an environment deeply related to food. His mother's parents managed a renowned 200-year-old mackerel sushi restaurant in Gion, Kyoto. During his childhood he frequently visited the sushi restaurant, where he developed curiosity about food, particularly changes in food (including fermentation) that take place in cooking processes. When he entered university, Japan had already gotten over the post-war period of food shortages. Instead, hyper-nutrition and obesity were then emerging as serious problems. In that environment, Professor Kawada focused his attention on nutrition science, particularly studies of obesity.

“Science should make people happy.” Based on this belief, Professor Kawada has been working to improve people's health. In 2012, he discovered an ingredient in tomatoes that was effective in addressing abnormal lipid metabolism. Underlying this epochal discovery was his earnest wish to work at improving people's health. He also hoped to stimulate consumers' interest in vegetables, and to invigorate the agricultural industry.

To questions about his own health promotion method, Professor Kawada replies that he eats moderately. “It harms your health to overeat, and to eat only one or two food items, even if they have excellent functionality.” With a smile, he added, “No matter how old you become, you can contribute to the food industry and agriculture by staying healthy and maintaining your appetite.”



The Moment at Which Books Evolve into “Media”

“What is a book?” This is a question we are now asked amidst the growing popularity of electronic books. At what moment do paperless digital data become a “book”? Can we call a series of digital data a “book” if it has been written as the content of a book? Do the data become a “book” when they are downloaded? Or when they appear on a monitor screen? The invention of paperless text information has made it difficult to define what a book is.

Even before digitization, it was not easy to define a book. Some have classified books as printed media, together with newspapers and magazines, while others deny the notion that books belong to “media.” The term “media” is a plural form of “medium,” derived from the Latin term “*medium*” (meaning “middle” or “intermediary”). Since the Middle Ages, the term has been used to refer to a spiritual medium. Regarding the definition of “media” in a contemporary context, many researchers refer to the Oxford English Dictionary, which introduces the first use of the term “mass medium” in 1923 in *The Advertising and Selling*, a journal of the American advertising industry. In that journal, the term “mass medium” was used to refer to the three methods of advertisement: newspapers, magazines and radio. In Japan until the 1970s, the Japanese term media was used as jargon of the advertising industry. Studies of the modern meaning of “media” lead us to surmise that the online culture, which encompasses books, magazines and newspapers, is likely to transform books into “media,” or more precisely speaking, “advertisement methods.”

On the other hand, the argument that books are not media persists. Supporters of this view tend to regard

books as high culture. This view is understandable, given the fact that, whereas many people state that their hobby is reading books, few proclaim without hesitation that their hobby is reading newspapers, watching TV or surfing the net. As a researcher of media, I am curious as to whether or not people will recognize electronic books as a symbol of high culture equivalent to traditional paper books.

Even before the appearance of electronic books, people experienced a radical book revolution. In his book *The Book Revolution* (1966), Robert Escarpit declares that with the first publication of Penguin Books in the United Kingdom in 1935, books changed from cultural and educational goods to consumer goods. To transform luxurious books into mass-produced items, publishers changed large, hardcover books into paperback, pocketsize books. In addition to changes in book formats, publishers had to plan publications in a series, rather than as independent books, and adopt the same font and a uniform design for bookbinding. In other words, paperbacks – that is, reprinted inexpensive small books with paper covers – represent the pinnacle of the industrialization of bookmaking, which paved the way for the development of electronic books, representing the digitization of books.

On the other hand, people retained the tradition of treasuring their collection of books, even paperbacks, as cultural and educational goods. German *Reclams Universal-Bibliothek* and Japanese *Iwanami Bunko* (which can be called the Japanese version of the *Reclams Universal-Bibliothek*) particularly enjoyed such a tradition; they were collected by the middle class as objects of their fetishism. Will

electronic books also enjoy such treatment? Since electronic books can be accessed and read anytime, anywhere, consumers are unlikely to purchase an e-book unless they desire to read it immediately. Will the ubiquitous nature of electric books, which ensures access anytime and anywhere, lead to the collapse of book culture, just as the pressure-free schooling system has resulted in lower scholastic performance of Japanese children by not forcing them to study at specific times?

There is nothing new about such a concern. For many years, people have been arguing about the future of books. In this regard, I would like to introduce the extremely optimistic view of Shinzo Shinjo, a space physicist, who assumed the post of President of Kyoto Imperial University in 1929. Even today, you can see his statue standing in front of the Clock Tower. On August 14, 1925, half a year after the initiation of radio broadcasting service in Japan, Shinzo Shinjo released an essay titled, “*Rajio Bunmei*” (lit. Radio Civilization) in the *Tokyo Asahi Shimbun* newspaper. In that article, he predicted the progress of media, which is still relevant even in the current age of the Internet.

Shinjo first expressed his view that radio should be a “democratic and universal” media accessible by everyone, rather than merely offering “pastime for a leisured class and tools for stock traders.” He said, “It is absolutely wrong to limit listeners only to the fixed number of subscribers, since radio transmits electric waves across the public sphere, which is open to everyone.”

His view, which reflects the vision of democracy of the Taisho Era (1912–1926), corresponds to the open access

vision that characterizes today's Internet culture. What is unique about Shinjo, however, is that he predicted the advent of a post-print media age. He argued that if radio evolved further, there would be no need for printed media, even written characters. It is interesting to find that Shinjo, a leading intellectual cosmopolitan of his time, shows no emotional attachment to book writing or written characters. Newspapers should be replaced by radio, he said, since it can deliver news more quickly.

"It is far from efficient, and even obsolete, to convert verbal words into complex signs of characters by writing them, and to convert them again into

verbal words by reading."

Shinjo argued that characters were invented as a means of communication, so they should serve communication. With the invention of radio, people could communicate without writing. So why did humans have to adhere to the old and complex custom of writing? To the argument that writing is essential in order to record history, Shinjo prepared the following answer: If you need to "preserve" words, you can record them and reproduce them with a record player.

"When record disks become as handy as printed items, and radios and record players become so compact and portable that you can carry them in

your pocket, we will be able to throw away books and printed materials. A civilization that does not need written characters will be able to make great advances."

This passage evokes the image of a smartphone. There is, however, a great difference between his statement and that state-of-the-art gadget. Contemporary online culture, including electronic books, still resorts to the use of characters. In this sense, Shinjo was probably seeing even farther into the future, since he discussed the advent of a civilization that does not resort to the use of any characters.

Takumi SATO

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- Ph.D., Kyoto University
- Associate Professor, Graduate School of Education
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"Through studies of media, I am seeking to understand both the present and past worlds."

"Basically I was a precocious child, with a keen interest in political affairs," said Dr. Takumi Sato. "As a child I developed empathy towards the slogan '*zohan yuri*' (There are no rebels without reasons), which was upheld in China during the Great Cultural Revolution (1966 – 1976)." In his high-school days, Dr. Sato said that he aspired to become a researcher of Chinese history. With this aspiration, he entered Kyoto University's Faculty of Letters. His interest, however, changed to Western history, when he attended classes of the subject by Professor Nobuo Noda, whose lecture was based on the scheme of his civilization theory. Amidst the Cold War, Dr. Sato became particularly interested in Germany, which represented the epitome of

the world at that time. Studies of socialist propaganda subsequently led him to become a researcher of comprehensive media, ranging from newspapers to *manga* (cartoons and caricatures).

In 1987, upon completing his master's program, Dr. Sato went to Germany to study at the Ludwig Maximilian University (Research Center of Modern History) for two years. After returning to Japan, he continued his research activities at the University of Tokyo and several other universities and institutions. In 2004, he assumed the post of associate professor at Kyoto University's Graduate School of Education. "Since Kyoto University has no faculties or departments dedicated to a single media form, such as newspapers, I did not narrow down my research target to any specific media," says Dr. Sato. "Since the term 'media' initially referred to advertisement methods, I am pleased that my research environment enabled me to engage in comprehensive research activities, unrestricted by the boundaries of individual media."

Today, Dr. Sato is actively committed to writing articles, offering lectures, and giving comments on various incidents. He said that he seldom refuses requests for such activities. Although this imposes a tight schedule, he believes that these activities also provide him with golden opportunities to explore new areas for his research activities, and to discover the

effect of his own media theories. "I believe," he said, "that good researchers listen to criticism of their ideas. This is an advantage of studying at Kyoto University, since it has many students capable of properly understanding and evaluating my articles." The last statement explains why there are so many students, both in and outside Japan, who are eager to join Dr. Sato's laboratory.



Getting into the Monkey Business

My fascination with primates began even before I can remember. Every night before bed my mother would read me one of the many adventures of *Curious George*, stories about a young chimpanzee brought from Africa to the big city of New York. At the age of three my mother tells me that I decided "When I grow up I'm going to Africa and live with chimpanzees." When five years old I had my first exposure to Japanese culture. My closest friends growing up were two Japanese-American brothers. My earliest memories of a fascination for science began in second grade after seeing a community of aquatic microorganisms under the microscope, taken from a pond in the city. By the time I was in high school I was convinced that I wanted to be a scientist, travel the world and immerse myself in different cultures, but it never crossed my mind that the realization of my earliest dreams of living with chimpanzees in Africa, becoming a scientist, and traveling around the world would begin in Japan. I can happily say that I am doing today what I dreamed of doing when I was a kid!

For the last 34 years, since the age of 20, Japan has been my home, and for nearly as long, I have been affiliated with the Graduate School of Science Kyoto University where I completed my Masters and Doctorate in Zoology. I have spent my career

as a primatologist, investigating mate choice and cultural behavior of Japanese macaques (1979-), parasite ecology of chimpanzees (1985-2005), phylogeography of macaques and langurs in Sri Lanka (2004-) and the transmission of malaria from monkeys to humans in Vietnam (2010-).

I began my earliest research on Japanese macaques with a blank slate, following the wise advice of my graduate advisor, the late Professor Junichiro Itani, to "become a monkey by learning how they live first hand, before you fill your head with other people's theories." From his advice, I came to realize too that my study subjects gave me a solid research topic, simply by learning what challenges they face in their daily lives and how they cope with them. My two most successful long-term research projects began quite serendipitously as a result of chance observations during my studies. One topic, now into its 33rd year is the longitudinal study of a culturally transmitted form of object play, which I call stone handling. In 1979, while an undergraduate at Kyoto University, I saw a young female Japanese macaque of the Arashiyama B troop playing around with a pile of stones. We have since documented that the behavior spread throughout the group, passed down consistently from one generation to the next. This led to a

comparative study of stone handling behavior in four macaque species in Japan, Indonesia, Thailand and Taiwan.

During my second trip to Tanzania, in 1987, to study the chimpanzees of Mahale M group, I was puzzled by a sick female feeding on a medicinal plant used by the people living in the same forest to treat many of the same symptoms. The multi-disciplinary collaborative project that developed from this literally took me around the world and led us to demonstrate for the first time that when infected with parasites, chimpanzees have treatments to control these infections and restore their general health. This led to research into primate host-parasite ecology and the larger issue of the evolution of self-medication in the animal kingdom.

The first year that I arrived in Japan, as an under-graduate exchange student I met several Japanese primatologists from Kyoto University. It was Professor Itani's work on Japanese monkeys and chimpanzees that had the biggest impression on me. I told Professor Itani that someday I would get my Ph.D. at Kyoto University and become a professor there. One big dream led to another and here I am today. We all need big dreams, and faith in ourselves to never give them up until they come true.



Michael Alan HUFFMAN

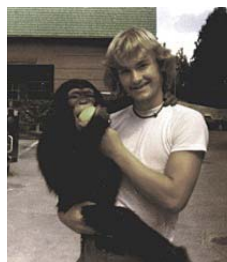
- Born in 1958
- Field of specialization: Zoology, Primate Social Systems Evolution
- Completed doctoral degree at Kyoto University
- Ph.D., Kyoto University
- Associate Professor, Primate Research Institute, Kyoto University
- URL: <http://www.pri.kyoto-u.ac.jp/shakai-seitai/shakai-shinka/huffman/index.html>

"My studies of primates have led me to look more at the similarities between humans and other

animals, rather than the differences. We are so close in so many ways."

Since his first encounter with a chimpanzee, in the children's storybook "*Curious George*," Dr. Huffman has constantly been "curious" about primates. In junior high school days, his friends called him "Monkey Mike" because he was always talking about monkeys. They believed that he would become a researcher specializing in monkeys. In high school, he volunteered at the hospital of the Denver Zoo, where he took care of a chimpanzee for the first time in his life. Dr. Huffman said that he was so excited to see a real "*Curious George*" that tears filled his eyes.

After enrolling in Fort Lewis College in 1976, he visited Japan for the first time in January 1978 on a student-exchange program with Kansai Gaidai University (Kansai University of Foreign Studies). During his time in Japan, he had an opportunity to meet with Dr. Masao Kawai, who was at that time Director of the Primate Research Institute at Kyoto University. Dr. Kawai introduced him to Dr. Junichiro Itani, who was then an associate professor in Kyoto



University's Faculty of Science. Visiting Dr. Itani at his laboratory, Dr. Huffman discussed primates with him for three hours, which further reinforced his curiosity in primates. Although he left Japan in August 1980 to continue his studies at Fort Lewis College, he was strongly determined to come back to Japan to attend Dr. Itani's lectures at Kyoto University's graduate school. In 1983, upon graduation from his college, he did return to Japan, to study at Kyoto University with scholarships provided by the Japanese government. For nearly 30 years since then, he has been studying about primates at Kyoto University, while engaging in fieldwork in various parts of Asia and Africa. In particular, he is committed to primate behavioral studies, parasite ecology, and self-medication.

Having lived in Japan for more than half his life, Dr. Huffman has developed strong empathy for Japanese people and culture. When he left Japan in 1980, he said that he was so overwhelmed that he could not hold back his tears; as soon as the airplane took off, he felt as if he was "literally torn apart." While in Japan, he was surprised to discover that Dr. Itani and other Japanese researchers regarded animals as being equivalent to human beings. "I realized," Dr. Huffman recalls, "that I was destined to encounter those researchers, and that's why I was guided to Japan." At the end he added one more remark with a smile: "I was also destined to meet a wonderful woman, who became my wife."

“I want to continue my research activities in the firm belief that basic researchers can contribute to society by producing seeds of new technologies.”

Each March since 2003, Kyoto University has held International Student Seminars, events co-organized by students and young researchers at the Graduate School of Biostudies, Institute for Virus Research, and the Graduate School of Pharmaceutical Sciences. Inviting excellent graduate students and young researchers from around the world, the Seminars are designed to promote discussion and exchange among researchers, transcending both national borders and academic boundaries. The Seminars comprise the Long Talk Session and the Short Talk Session, in which participants compete through their presentations in English. Based on evaluation of their performance abilities, along with the content of their presentations, awards are offered to the best speakers. At the 10th Seminar, held in 2012, the Best Oral Presentation Award was given to Mr. Naoki Komatsu. This time, the editor of *Raku-Yu* had the pleasure of interviewing him to hear about the Seminar and his research programs.

*Information on this year's 11th Seminar is available at the following link:
<http://www.lif.kyoto-u.ac.jp/11thss/index.html>.

I heard that you were a member of the Organizing Committee for the 8th Seminar, held in 2010. Is that true?

Yes, I ran for the position of committee member, because I believed that committee activities would give me a great opportunity to communicate with overseas students and postdoctoral researchers, as well as with Japanese students in other laboratories. Although I was busy with my own research projects, I felt that work as a committee member could be an important step for developing my career as a researcher.

I presume that you are good at speaking English.

No; to tell the truth, I'm not good at all. Yet, I expected that through activities at the Organizing Committee I would be able to learn better ways of communication: better ways to convey my own views, to receive responses from others, and to reflect on their opinions in projects. Indeed, I was able to learn many better ways.

And at the 10th Seminar, you participated in the presentation contest. How many participants were there?

In the Long Talk Session I participated in, there were eight speakers from overseas and nine from Japan.

What element was crucial to your winning the award? Was it the content of your research activities?

The content of research activities was of course important, but I believe that presentation ability was equally essential. In other words, you have to convey to researchers in other academic fields how interesting your research theme is, and in what ways your research activities will be helpful to society.

That must be very important for researchers. By the way, what kind of research projects are you engaged in?

My research theme relates to the mechanism of cancer cell proliferation. Cells proliferate strictly based on information they receive from outside. However, in cancer cells, mutated genes continue to transmit mitogenic signals regardless of the extracellular information. Then the cancer cells continue to proliferate endlessly. This distinguishes cancer cells from normal cells. If we can detect the mitogenic signals in living cells with higher sensitivity, we would be able to develop anticancer drugs with greater efficiency. Therefore, we are seeking highly sensitive tools to detect the signals. At our laboratory, we are studying information transfer that takes place within cells by visualizing the transfer. I am developing a technology for visualizing them. There are many types of information transferred to cells. Nevertheless, visualizing them itself is quite difficult, I am seeking a simple way, the simplest way possible, to develop a tool that permits broad application. At the Seminar, I offered a presentation on the development of such a tool.

I believe that not all jury members were specialists in your academic field, so you were obliged to make particular efforts to gain their understanding. What was the most difficult point in this regard?

Researchers in my academic field certainly feel that it is great to develop tools for visualizing cell signaling, but those unfamiliar with the field might find it difficult to understand the need for my studies. I therefore had first to explain why it is important to develop the tools; then I had to explain the difficulty of developing the tools. Otherwise, some jury members might not have understood the significance of simplifying a system for

developing the tools. That was the most difficult point.

You said that you were not good at English, but I presume that you like speaking English.

I like communicating an idea or a story in any language I can speak. When I was little, I liked telling my parents about stories from books I read. As I grew, I began to aspire to become a researcher, because I wanted to tell others of the outcomes of my studies. Presently, I hope to engage in research activities that benefit many people.

Have you decided on your career plan after completing the doctoral program?

I hope to find a job in or outside Japan that enables me to continue my research activities. As another option, I am considering study abroad, since there are many universities offering programs in Synthetic Biology, a new field of biology, in and around San Francisco and San Diego.

What is your ultimate goal? Is it practical application of the technology you are currently developing?

I hope so... I wish I could expand the scope of my research. I honestly don't believe that my research activities will become helpful within several years, but in 100 years I hope that my research outcomes will benefit society in a practical way. I also hope that there will be a system in Japan for supporting research programs that will become useful in 100 years. When I was studying at the Faculty of Agriculture, I learned of many cases in which basic research has benefited society. For years I have been considering how basic researchers can best contribute to society. I now believe that our task as basic researchers is to produce seeds of new technologies. By committing to basic research activities, I hope to contribute to society in the long term.



Naoki KOMATSU

• Born in 1986
 • Currently second-year doctoral student at Graduate School of Biostudies, Kyoto University





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P R O M E N A D E

京都消遥

京都観世能楽館

Kyoto Kanze Kaikan: Experience the Culmination of Traditional Japanese Culture and Aesthetics

From Kyoto University's Yoshida Campus, a twenty-minute walk south takes you to Kyoto Kanze Kaikan, a *Noh* theater located southwest of Okazaki Park, in which the Heian Shrine and museums of fine arts are situated. Among the five *Noh* theaters in Kyoto, which present performances of *Noh* and *Kyogen*, Kyoto Kanze Kaikan is the largest and most active. Whereas *Noh* is a highly abstract drama, combining dances, chanting, and acting using elaborate costumes and masks, *Kyogen* has a more comical nature. Both performing arts, originating during the seventh century, are designated as Japan's important intangible cultural properties. They are also inscribed on the UNESCO Intangible Cultural Heritage List.

The present *Noh* style was established in Kyoto during the latter half of the 14th century by Kan'ami and his son Zeami. *Noh* is unparalleled by any other performing arts in the world in that it represents the ultimate in simplicity and abstraction. The *Noh* stage is extremely simple: it has no settings except for a wooden panel, known as *kagami-ita* (lit. mirror board), upon which a pine tree is usually depicted. The wooden panel at Kyoto Kanze Kaikan has the picture of a pine tree painted by a celebrated Japanese-style painter, Insho Domoto (1891–1975). Despite the ultimate simplicity and abstraction of the stage, various devices are employed, including large jars installed under the stage floor. The jars function as sound effect devices to resonate the sounds made by actors stamping their feet on the stage. Whereas the theater presents both modern and classical dramas, the latter particularly display a profound view of the world; a view characterized by the recognition of the evanescence of life and of all beings. This view of the world is represented through scenes of encounters and dialogues between the living and spirits of the dead.

On the shadowy stage, actors create the world of *yugen* (quiet beauty or elegant simplicity), a culmination of Japanese aesthetic sense that has evolved throughout the Japanese history. In short, the audience at a *Noh* play can experience the unique aesthetic sense that resides in the deepest part of the Japanese psyche.

*Kyoto Kanze Kaikan URL: <http://www.kyoto-kanze.jp/index.htm> (Japanese only)



Inside the theater, 551 seats are arranged in an "L" shape, facing the stage and the *hashigakari* (a bridge-like extension) to its left.



There are four *Nohgaku* (*Noh* play and *Kyogen*) clubs at Kyoto University. This photo shows a scene from a performance by the oldest club (*Kanzekai*), held at Kyoto Kanze Kaikan in November 2012 on the club's anniversary. Although they were only amateur students, the members of the club acted and chanted so well that the audiences exploded with applause.



The *kagami-ita* or the panel on the back of the *Noh* stage also functions as a board to resonate the sounds of chanting and musical instruments. The pine tree painted on the board by Insho Domoto displays his unique talent in abstract expression.